TECHNICAL NOTES

U. S. DEPARTMENT OF AGRICULTURE NEVADA SOIL CONSERVATION SERVICE

TN - BIOLOGY - NV- 27 MAY 1990

Mule Deer

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TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE WYOMING SOIL CONSERVATION SERVICE

Biology No. 110 January 1986

Subject: MULE DEER*

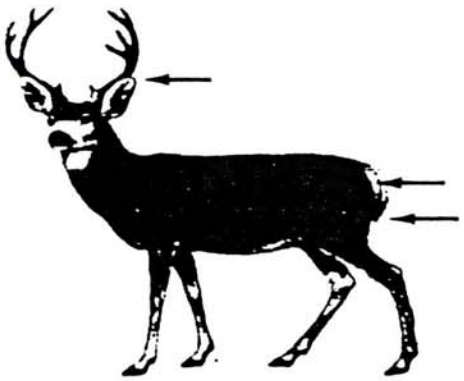
General

Successional plant communities provide good habitat for the mule deer (Odocoileus hemionus). This species of deer is most often associated with open forest situations. Brushlands on steep and rugged topography are areas very often utilized by the mule deer. Food, cover, and available winter range are the three most crucial components of mule deer habitat.

Food Requirements

The utilization of trees, shrubs, forbs, and grasses varies seasonally for the mule deer. This is due primarily to the seasonal availability of the various plant communities. Seasonal metabolic requirements of the mule deer will also dictate to some degree what foods are utilized. Mule deer will frequently feed in areas contiguous to cover or where food and cover occur together.

In an effort to simplify understanding of seasonal food requirements and food preferences, the following bar graphs and tables are presented.



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*Information taken from Ecoregion M3113 Handbook and Habitat Suitability Index Models, Wildlife Species Narratives (literature searches), U.S. Fish and Wildlife Service, various dates between 1978-1985.

Water Requirements

Water requirements for the mule deer are frequently satisfied by free water available in its food. A study in the Missouri River Breaks, Montana, revealed that the use of range by mule deer decreased sharply at distances of 0.5 mi (0.8 km) or more from standing water. One study stated that "the distances from water at which mule deer were observed generally reflected the distribution of water sources in relation to areas used by the animals during different seasons and years." He concluded that the relative intensity of use of a particular vegetative type during seasons and years, rather than distance from water, determines the relationship between locations of mule deer observations and water supplies.

Cover Requirements

Two kinds of cover are necessary for mule deer to utilize an area. These are hiding cover and thermal cover. Hiding cover, according to one study, is any vegetation capable of hiding 90 percent of a deer from human view at a distance equal to or less than 200 ft (61 m). This distance is called a "sight distance."

In a forest or dense shrub vegetative type, hiding-cover patches between four and eight sight distances (800-1,600 ft or 244-288 m) wide provide optimal hiding cover. Hiding-cover patches four to eight sight distances wide will result in opening with an area of 11.5 to 46 acres (4.7 to 18.5 ha). Patches of a smaller size can also satisfy hiding-cover requirements for the mule deer. This will depend to a large degree on the topography of the area.

Thermal cover serves as an aid to deer in reducing the effects of ambient air temperature, radiational heat loss, and insulation that tend to raise or lower body temperatures beyond normal levels. Small evergreen trees and shrubs on winter range and deciduous trees and shrubs on summer and spring-fall range provide excellent thermal cover for mule deer. Sapling trees or shrubs, evergreen or deciduous, at least 5 ft (1.5 m) tall with 75 percent crown closure provide adequate thermal cover on summer and spring-fall deer range. In a forest vegetative type, trees at least pole size or larger with 60 percent crown closure provide adequate thermal cover. Thermal cover requirements on mule deer winter range will be the same, except all thermal cover must be evergreen. It has been estimated that the optimal size of deer thermal cover areas are 2 to 5 acres (0.81 to 2 ha) and have a minimum width of 300 ft (91 m).

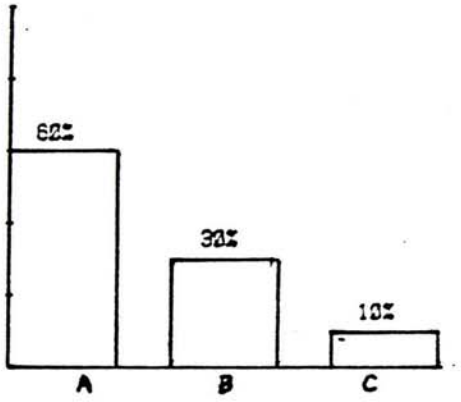
Reproductive Requirements

Water, cover, and lush vegetation are important components of habitat used by the mule deer for fawning. Fawning areas are those areas where all the needs of the doe and fawn are found within a relatively compact area. One of the most critical needs in the fawning area is that of succulent vegetation to be used by the doe for milk production.

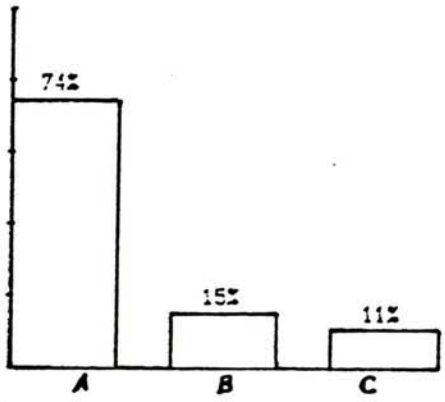
MULE DEER
SEASONAL FOOD UTILIZATION*

A = TREES AND SHRUBS
B = FORBS
C = GRASSES, SEDGES, GRASSLIKES

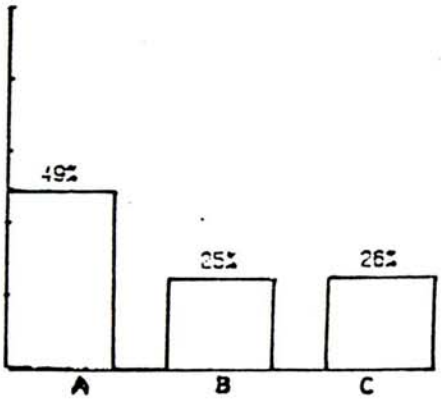
FALL



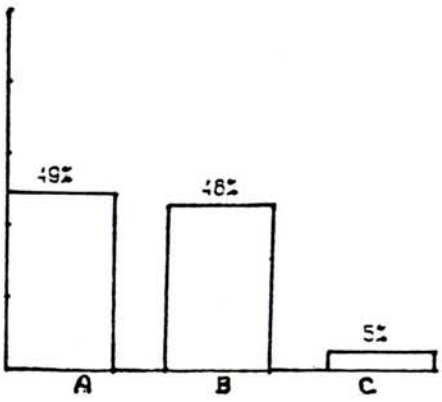
WINTER



SPRING



SUMMER



*THESE PERCENTAGES ARE AVERAGES FOR EACH SEASON AND MAY VARY DEPENDING UPON WHAT PLANT SPECIES ARE AVAILABLE

The following table is a list of the most frequently used trees, shrubs, forbs, and grasses by mule deer

TREES AND SHRUBS	FORBS	GRASSES
Willows (Salix spp.)	Phloxes (Phlox spp.)	Wheatgrasses (Agropyron spp.)
Roses (Rosa spp.)	Knotweeds (Polygonum spp.)	Bromes (Bromus spp.)
Small Soapweed (Yucca glauca)	Cinquefoils (Potentilla spp.)	Sedges (Carex spp.)
Currants (Ribes spp.)	Clovers (Trifolium spp.)	Fescues (Festuca spp.)
Chokecherry (Prunus spp.)	Dandelion (Taraxacum officinale)	Bluegrasses (Poa spp.)
Quaking Aspen (Populus tremuloides)	Yarrow (Achillea spp.)	
Big Sagebrush (Artemisia tridentata)	Pussytoes (Antennaria spp.)	
Mountain-Mahagony (Cercocarpus montanus)	Fringed Sage (Artemisia frigida)	
Cliffrose (Cowania mexicana)	Asters (Aster spp.)	
Bitterbrush (Purshia tridentata)	Vetches (Astragalus spp.)	
Curlleaf Mountain-Mahogony (Cercocarpus ledifolius)	Arrowleaf Balsamroot (Balsamorhiza sagiffata)	
Gambel Oak (Quercus gambelii)	Wild-Daisies (Erigeron spp.)	
Common Serviceberry (Amelanchier alnifolia)	Eriogonums (Eriogonum spp.)	
Bearberry (Arctostaphylos uva-ursi)	Geraniums (Geranium spp.)	
Snowbrush (Ceanothus velutinus)	Lupines (Lupinus spp.)	
Rabbitbrushes (Chrysothamnus spp.)	Alfalfa (Medicago sativa)	
Junipers (Juniperus spp.)	Pentstemons (Pentstemon spp.)	
Ponderosa Pine (Pinus ponderosa)	American Vetch (Vicia americana)	
Douglas-Fir (Pseudotsuga menziesii)		
Snowberries (Symphoricarpus spp.)		
Canada Buffaloberry (Shepherdia canadensis)		
Myrtle Boxleaf (Pachistima myrsinites)		
Skunkbush (Rhus trilobata)		
Pinon Pine (Pinus edulis)		

Desirable fawning habitat are areas of low shrubs or small trees between 2 and 6 ft (0.6 to 1.8 m) tall under approximately 50 percent overstory tree crown cover. Slopes within these areas should be less than 15 percent. Plentiful succulent vegetation should be available, especially during June, and an available water source should be no more than 600 ft (183 m) away. The size of these fawning areas is around 1 to 5 acres (0.4 to 2 ha).

Special Habitat Requirements

Winter range is a key factor of mule deer habitat. During winter, mule deer prefer the open-timbered west-facing exposures and the shrub-covered south-facing exposures. These areas have warmer air temperatures, less ground surface snow, availability and abundance of preferred browse species, and proximity to vegetative types providing both food and cover.

Snow within heavily forested areas will prevent use of these areas by mule deer. One study found that snow 10 to 12 inches deep will impede mule deer movements, and 20 to 24 inches of snow will essentially preclude their use of an area. Those areas generally free of snow cover most of the winter are ridges plus the southern and western exposures.

Interspersion Requirements

Mule deer habitat requires a mixture of various vegetative types. As mentioned earlier under food requirements, desirable deer ranges consist of those areas where food and cover occur together. One study found that winter range utilized by mule deer was composed essentially of about 45 percent shrub predominant exposures and about 45 percent coniferous timbered aspect. Another study found in the best winter range of the Jawbone region in California that the maximum distance between feeding and bedding areas was less than 0.25 mi (0.4 km).

One study found that "the cover types required by deer on summer and spring-fall range should approximate the following: (1) 20 percent in hiding cover, (2) 10 percent in thermal cover, (3) 5 percent in fawning cover, and (4) an additional 5 percent in hiding, thermal, or fawning cover." The result is 40 percent of the habitat in cover with the remaining 60 percent as foraging areas. On mule deer winter range, an increased percentage should be allowed for thermal cover. Forage areas are defined as openings, natural or manmade, and those forested areas that cannot be used as cover (thermal or hiding). This includes forest stands with a canopy closure less than 60 percent or stands that will not hide at least 90 percent of a deer at a sight distance of 200 ft (61 m).

Maximum use of a foraging area will usually occur at a point no farther than 600 ft (183 m) from the edge of cover as deer use declines beyond that point. Forage areas up to 1,200 ft (366 m) wide will provide optimal habitat.

Special Considerations

Mule deer winter range is one of the most important components of deer habitat. Any adverse environmental impacts on winter range are usually magnified. An optimal cover/forage ratio is 40 percent cover and 60 percent forage. Any disturbance of vegetative types that would alter this ratio will probably result in mule deer habitat being less than optimum.